

IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF UTAH
NORTHERN DIVISION

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| <p>ECONOVA, INC.,</p> <p style="text-align: center;">Plaintiff,</p> <p style="text-align: center;">v.</p> <p>DPS UTAH, COLLIER GROUP, and KEVIN E. COLLIER,</p> <p style="text-align: center;">Defendants.</p> | <p>ORDER and MEMORANDUM DECISION</p> <p>Case No. 1:12-cv-174</p> <p>Judge Tena Campbell</p> |
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Plaintiff EcoNova, Inc. (EcoNova) filed a patent infringement suit against Defendants DPS Utah, Collier Group, and Kevin E. Collier (collectively, DPS or Defendants). The court conducted a Markman hearing at which the court heard arguments regarding ten disputed terms. The following is the court's construction of those terms.

I. FACTUAL BACKGROUND

Many companies use water as part of their operations, and those operations frequently result in contaminated water that poses concerns if not properly treated. EcoNova manufactures and sells water treatment devices called centrifugal separators. The centrifugal separator receives contaminated water and spins it at high speeds and pressures to separate the water from other components, such as particulate matter or oil. EcoNova owns five patents relating to centrifugal separators: U.S. Patent No. 6,346,069 (filed Nov. 17, 1999) ('069 Patent); U.S. Patent No. 6,607,473 (filed Jan. 25, 2002) ('473 Patent); U.S. Patent No. 6,719,681 (filed Jan. 25, 2002) ('681 Patent); U.S. Patent No. 7,060,017 (filed Apr. 9, 2004) ('017 Patent); and U.S. Patent No. 7,314,441 (filed May 30, 2006) ('441 Patent).

Defendant Kevin Collier was an employee of EcoNova from 2000 to 2005, and he was

listed on the patents as the inventor of each of EcoNova's patents. Before Mr. Collier left, he assigned all of his rights in the patents to EcoNova. After leaving EcoNova and pursuing an unrelated business venture, Mr. Collier, along with others, formed DPS Utah and the Collier Group. DPS Utah is a wholly-owned subsidiary of DPS Global in England. DPS began to develop a centrifugal separator product called HydroLoc, and beginning in April and May 2011, DPS publicly marketed the product concept in an effort to commercialize the HydroLoc.

After EcoNova became aware of Defendants' efforts to market the HydroLoc unit, EcoNova filed this patent infringement suit (see Docket No. 2), followed by an Emergency Motion for a Temporary Restraining Order and Preliminary Injunction (Docket No. 19). On November 14, 2012, the court heard arguments on the emergency motion for preliminary injunction and conducted a hearing as required by *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996) (en banc).¹ For the purposes of the preliminary injunction only, EcoNova proposed one claim from each of the five patents that would likely show how the HydroLoc infringes: claim 22 of the '069 Patent; claim 13 of the '473 Patent; claim 27 of the '681 Patent; claim 1 of the '017 Patent; and claim 1 of the '441 Patent. Although the five claims are each taken from a different patent, the patents are all related, and the claims use similar or identical terms such that there is significant overlap, and the parties agreed that the court could give the same construction to terms appearing in separate patents. After collapsing together the identical language, the parties only dispute ten terms. The following is the court's ruling for the claim

¹ Two weeks later, on November 28, 2012, the court granted EcoNova's motion for a preliminary injunction. (See Docket No. 98.)

construction of those ten disputed terms.²

II. ANALYSIS

A. Legal Standards Used During Claim Construction

Claim construction is an issue of law for the court to decide. *Markman*, 52 F.3d at 970–71. A court should begin with the language of the claim because the claims of a patent “define the invention to which the patentee is entitled the right to exclude.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc). Claim terms “are generally given their ordinary and customary meaning,” which is “the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” *Id.* at 1312–13. Sometimes, the meaning of claims terms “may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words.” *Id.* at 1314. Beyond that, if a court needs evidence of the intended meaning, it should first look to the intrinsic evidence (the context of the claims, the patent specification, and the prosecution history). *Id.* at 1313–16. In most situations, an examination of the intrinsic evidence will resolve any ambiguity in a disputed term. *Id.* at 1315. The court may not, however, import limitations from the specification into the claim, such as by limiting the claims to the embodiments described in the specification. *Id.* at 1323–24. If yet more evidence is needed, the court may rely on extrinsic evidence, such as expert and inventor testimony, dictionaries, and treatises. *Id.* at 1318. The court uses extrinsic evidence with caution, and will not allow it to undermine the intrinsic evidence. *Id.* at 1319. With these principles in mind, the

² The court ruled on four of the ten disputed terms in its preliminary injunction order (Docket No. 98). This order reiterates and adds to the construction of those four terms.

court turns to the disputed language.

B. Interpretation of the Disputed Terms

As noted by the parties, the five patents are closely related. Because of crossover between language in the five proposed claims, there are only ten disputed phrases to be construed. See *Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1334 (Fed. Cir. 2003) (noting that a court may “presume, unless otherwise compelled, that the same claim term in the same patent or related patents carries the same construed meaning”). The five proposed sample claims are quoted below, with the disputed terms and phrases underlined. Claim 22 of the '069 Patent reads:

A separator comprising:

a vessel having a peripheral wall bounding a chamber, the chamber communicating with an inlet channel and an outlet channel, the vessel being rotatable about a rotational axis extending through the vessel;

a plurality of fins disposed within the chamber, each of the fins outwardly projecting from the rotational axis in substantially parallel alignment with the rotational axis;

an exit tube disposed along at least a portion of the rotational axis of the vessel, at least a portion of the exit tube having a first end disposed within the chamber and an opposing second end in fluid communication with the exterior of vessel;

an extraction tube disposed within the chamber, the extraction tube having a first end in fluid communication with the exit tube and an opposing second end disposed a distance from the peripheral wall; and

a first disc disposed within the chamber, the first disc outwardly projecting from the rotational axis so as to intersect with each of the plurality of fins.

('069 Patent col.23 ll.18–38 (emphasis added).) Claim 13 of the '473 Patent reads:

A method of separating a liquid-liquid mixture, comprising:

feeding the liquid-liquid mixture into a chamber of a vessel such that the liquid-liquid mixture is pressurized within the vessel, the liquid-liquid mixture comprising a heavy component and a light component, the vessel including an inlet, a light component outlet channel, and a heavy component outlet channel;

rotating the vessel about a rotational axis extending through the vessel as the liquid-liquid mixture is feed into the chamber such that the heavy component collects toward at least a portion of the peripheral wall of the vessel and the light component collects toward the rotational axis;

passing the light component through the light component outlet channel at a first pressure; and

passing the heavy component through the heavy component outlet channel at a second pressure, the first pressure and the second pressure being set such that a boundary line between the heavy component and the light component is produced within the chamber at a radial distance from the rotational axis wherein, the first pressure being different than the second pressure.

('473 Patent col.31 l.8–col.32 l.9 (emphasis added).) Claim 27 of the '681 Patent reads:

A method for separating particulate matter from a fluid in which the particulate matter is suspended, the method comprising:

feeding a fluid containing a particulate matter into a chamber of a vessel through an inlet, the chamber being at least partially bounded by a peripheral wall and the chamber also communicating with an outlet;

rotating the vessel about a rotational axis extending through the vessel such that at least a portion of the particulate matter settles out of the fluid and against at least a portion of the peripheral wall of the vessel;

delivering a stream of removal fluid into the rotating vessel at or adjacent to the peripheral wall such that delivery of the removal stream into the vessel causes at least a portion of the particulate matter settled against the peripheral wall to resuspend within the fluid;

removing at least a portion of the fluid having the resuspended particulate matter therein from the vessel through an extraction tube, the extraction tube having an opening to receive the fluid at or adjacent to the peripheral wall; and

removing through the outlet of the vessel the fluid from which the particulate material has settled out.

('681 Patent col.32 ll.21–44 (emphasis added).) Claim 1 of the '017 Patent reads:

A separator comprising:

a vessel having a peripheral wall bounding a chamber, the vessel being rotatable about a rotational axis extending through the vessel, the chamber communicating with an inlet and a first outlet;
 a plurality of fins disposed within the chamber;
a second tube extending from toward the rotational axis to toward the peripheral wall, the second tube having a first end in fluid communication with the exterior of the vessel and an opposing second end bounding a second outlet, the first outlet being disposed closer to the rotational axis than the second outlet such that during use a fluid boundary line can be formed between the first outlet and the second outlet; and
a first tube extending from toward the rotational axis to toward the peripheral wall, the first tube being coupled with a fluid source for selectively dispensing a fluid stream at or adjacent to the peripheral wall.

(’017 Patent col.29 ll.40–57 (emphasis added).) Claim 1 of the ’441 Patent reads:

A method for separating particulate matter from a fluid in which the particulate matter is suspended, the method comprising:
 feeding a fluid containing particulate matter into a chamber of a vessel through an inlet, the chamber being at least partially bounded by a peripheral wall and the chamber also communicating with a first outlet and a second outlet;
 rotating the vessel about a rotational axis extending through the vessel such that at least a portion of the particulate matter settles out of the fluid and against at least a portion of the peripheral wall of the vessel;
disturbing at least a portion of the particulate matter settled against the peripheral wall so that at least a portion of the particulate matter settled against the peripheral wall is resuspended within the fluid;
 removing at least a portion of the fluid having the resuspended particulate matter therein from the vessel through the first outlet; and
 removing through the second outlet of the vessel the fluid from which the particulate material has settled out.

(’441 Patent col.29 ll.44–65 (emphasis added).)

1. “Peripheral Wall of the Vessel”

The disputed phrase “peripheral wall of the vessel” appears in claim 1 of the ’441 Patent, claim 13 of the ’473 Patent, and claim 27 of the ’681 Patent. EcoNova’s proposed construction is “a material layer situated about at least a portion of the inner periphery of the vessel, the

material layer at least partially bounding the chamber, the peripheral wall associated with the vessel.” (Pl.’s Mem. in Supp. 14, Nov. 9, 2012, ECF No. 72 (Pl.’s Mem.).) The Defendants’ proposed construction is “the outer wall of the vessel.” (Defs.’ Supplemental Mem. in Opp’n 8, Nov. 9, 2012, ECF No. 67 (Defs.’ Mem.).)

Defendants contend that the “peripheral wall” means nothing more than the very outermost wall of the vessel. EcoNova argues that “peripheral wall” could include not only the outermost wall of the vessel, but also any structure that at least partially bounds the chamber within, such as structures bolted to the interior, so long as it is some material layer that defines the boundary at which the chamber ends and against which the particulate matter collects. The court concludes that EcoNova’s proposed definition most closely captures the essence of the claim, but is unnecessarily long and redundant. The court instead provides a claim construction that is guided by intrinsic and extrinsic evidence.

The intrinsic evidence sheds some light on the dispute, but not enough. Before the phrase “peripheral wall of the vessel” appears in claim 1 of the ’441 Patent, the claim reads “the chamber [is] at least partially bounded by a peripheral wall.” (’441 Patent col.29 ll.48–49.) The same is true for claim 27 of the ’681 Patent. (See ’681 Patent col.32 ll.25–26.) Moreover, there are many instances of language in the patents’ specifications indicating that the “peripheral wall” is situated at the boundary line of the chamber where the settled particulate matter collects while the centrifuge is in operation.³ Based on this evidence, the court defines “peripheral wall” by

³ (See ’441 Patent abstract (“at least a portion of the particulate matter settles against at least a portion of the peripheral wall.”); id. col.11 ll.57–60 (“in one embodiment solid-liquid separator **10** operates by settling the particulate matter against or adjacent to wall **92** of vessel **60** from where it is subsequently removed.”); id. col.12 ll.13–15 (“the particulate matter in stream **38** is forced by the rotation of vessel **60** to accumulate against wall **92**”); id. col.14 ll.48–49

clarifying that the peripheral wall partially bounds the chamber,⁴ and by noting that at least some of the particulate matter collects against at least part of the peripheral wall.

But because more is needed to fully construe “peripheral wall,” both EcoNova and the Defendants point the court to dictionary definitions to aid the court’s interpretation. EcoNova defines “peripheral” as “pertaining to, situated in, or constituting the periphery: peripheral resistance on the outskirts of the battle area,” and “wall” as “a material layer enclosing space.” The Defendants’ definition of “peripheral” is “of, relating to, affecting or forming a periphery or surface part.” Based on these definitions, and on the intrinsic evidence in the patent, a clear construction of “peripheral wall” should include both the phrase “a material layer” as well as language showing that the peripheral wall is the boundary or surface at which the chamber ends. This construction also dovetails with the intrinsic evidence that indicates the peripheral wall is the structure against which the particulate matter collects.

Finally, there is some dispute about the meaning of the phrase “of the vessel.”

(“The centrifugal force, however, keeps the particulate matter substantially adjacent to perimeter wall **92**.”); *id.* col.14 ll.55–57 (“rotating vessel **60** resettles the particulate matter against peripheral wall **92**.”); *see also* ’473 Patent abstract, col.11 ll.56–58, col.12 ll.11–13, col.14 ll.47–48, col.14 ll.54–56 (containing nearly identical language as in the ’441 Patent); ’681 Patent abstract, col.11 ll.64–66, col.12 ll.19–22, col.14 ll.54–55, col.14 ll.60–63 (same).)

⁴ The court disagrees with Defendants’ argument in their brief that the use of “chamber” in the construction impermissibly imports a limitation. (*See* Defs.’ Supplemental Mem. in Opp’n 9, Nov. 9, 2012, ECF No. 67.) As noted above, the first appearance of the phrase “peripheral wall” appears squarely within the same claim, only a few lines earlier, in the phrase “the chamber being at least partially bounded by a peripheral wall.” The court’s use of “chamber” to define “peripheral wall” is simply a reflection of how the peripheral wall was used in the context of that claim. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (en banc) (“the context of the surrounding words of the claim also must be considered in determining the ordinary and customary meaning of those terms.”) (quoting *ACTV, Inc. v. Walt Disney Co.*, 346 F.3d 1082, 1088 (Fed. Cir. 2003)). This is not the kind of importation of limitations from the specification that is prohibited in Phillips. *See id.* at 1323–24.

Defendants argue that the vessel wall is synonymous with the peripheral wall, such that the peripheral wall cannot be anything more than the outermost wall. EcoNova maintains that “of the vessel” is a possessive phrase indicating that the peripheral wall is just one of the many sub-components of the vessel. Based on a reading of the specification, the court agrees with EcoNova. The vessel comprises many components, only one of which is the peripheral wall.

Accordingly, the court’s construction of “peripheral wall of the vessel” is “a material layer at least partially bounding the chamber of the vessel.”

2. “Disturbing At Least a Portion”

The disputed phrase “disturbing at least a portion of the particulate matter settled against the peripheral wall” appears in claim 1 of the ’441 Patent. EcoNova’s proposed construction is “unsettling at least a portion of the particulate matter accumulated against the peripheral wall.” (Pl.’s Mem. at 17.) The Defendants’ proposed construction is “altering the position of the particulate matter that has settled against the peripheral wall by moving it inwardly against the centrifugal force.” (Defs.’ Mem. at 9.)

This phrase needs very little construction—the parties only dispute the construction of the term “disturbing” within the context of the patent. EcoNova proposes a construction that replaces “disturbing” with a synonym taken from the dictionary. Defendants’ construction requires the disturbance to be directed inwardly against the centrifugal force.

The court is not persuaded by Defendants’ proposed construction, which attempts to read into the claim a limitation from only one of the many possible embodiments of the claimed invention. See Phillips, 415 F.3d at 1323 (noting courts should “avoid the danger of reading limitations from the specification into the claim”). Instead, the court will adopt EcoNova’s

proposed synonym of “unsettling” as the meaning of “disturbing” as it most closely resembles the plain and ordinary meaning already apparent in the rest of the claim.

Accordingly, the court’s construction of the disputed phrase is “unsettling at least a portion of the particulate matter settled against the peripheral wall.”

3. “Resuspend[ed] Within the Fluid”

The disputed phrase “resuspended within the fluid,” appears in claim 1 of the ’441 Patent, and a similar disputed phrase, “resuspend within the fluid,” appears in claim 27 of the ’681 Patent. The parties agreed that the same construction should apply to both phrases. EcoNova’s proposed construction is “to put particles that settled out of the fluid back into suspension in the fluid.” (Pl.’s Mem. at 19.) The Defendants’ proposed construction is “suspended again within the fluid, the fluid being that which contains particulate matter and was fed into the chamber of the vessel through an inlet.” (Defs.’ Mem. at 13.)

At the hearing there was very little discussion about what “resuspend[ed]” means, and the court finds no reason to construe that term further. The parties primarily dispute how the court should construe “the fluid.” EcoNova contends that the meaning of “the fluid” should vary depending on the context of each patent in which the term is used: for example, sometimes “the fluid” could refer to the fluid containing particulate matter that is to be separated into its components, and other times could refer to a cleaning fluid delivered into the vessel. Defendants argue that “the fluid” can only mean one fluid, which is the fluid containing particulate matter that is to be separated into its components.

The court agrees with Defendants’ proposition that “resuspend[ed]” should be defined as “suspended again” because that more accurately captures the meaning of the claim. Also, the

court is partially persuaded that “the fluid” should mean a fluid “which contains particulate matter and was fed into the chamber of the vessel through an inlet”—but only for claim 1 of the ’441 Patent. The court does not agree that “the fluid” should have one and only one meaning for all of the patents. Instead, the court agrees with EcoNova that “the fluid” should be interpreted differently depending on the ordinary meaning present in each patent. See, e.g., AK Steel Corp. v. Sollac and Ugine, 344 F.3d 1234, 1243 (Fed. Cir. 2003) (noting that although it is unusual to give different constructions to two similar claims, the court felt compelled to do so because interpreting both claims in the same way would run “counter to the ordinary meaning of the claims”). For example, the short phrase “the fluid” is used many times in claim 27 of the ’681 Patent, and could refer to two different fluids, both of which are important to the claim. If the court were to define “the fluid” to mean only one kind of fluid in all instances, it would render that claim absurd.

Accordingly, the court’s construction of the disputed phrase is “suspended again within the fluid,” where “the fluid” can take on a different meaning depending on the context of each patent. As applied to claim 1 of the ’441 Patent, “the fluid” refers to the only fluid referenced in the claim, which is “a fluid which contains particulate matter and was fed into the chamber of the vessel through an inlet.” (’441 Patent col.29 ll.47–48.) But, as applied to claim 27 of the ’681 Patent, “the fluid” in the disputed phrase “resuspended within the fluid” refers to the removal fluid delivered into the vessel at or adjacent to the peripheral wall. (See ’681 Patent col.32 ll.33–34.)

4. “Tube”

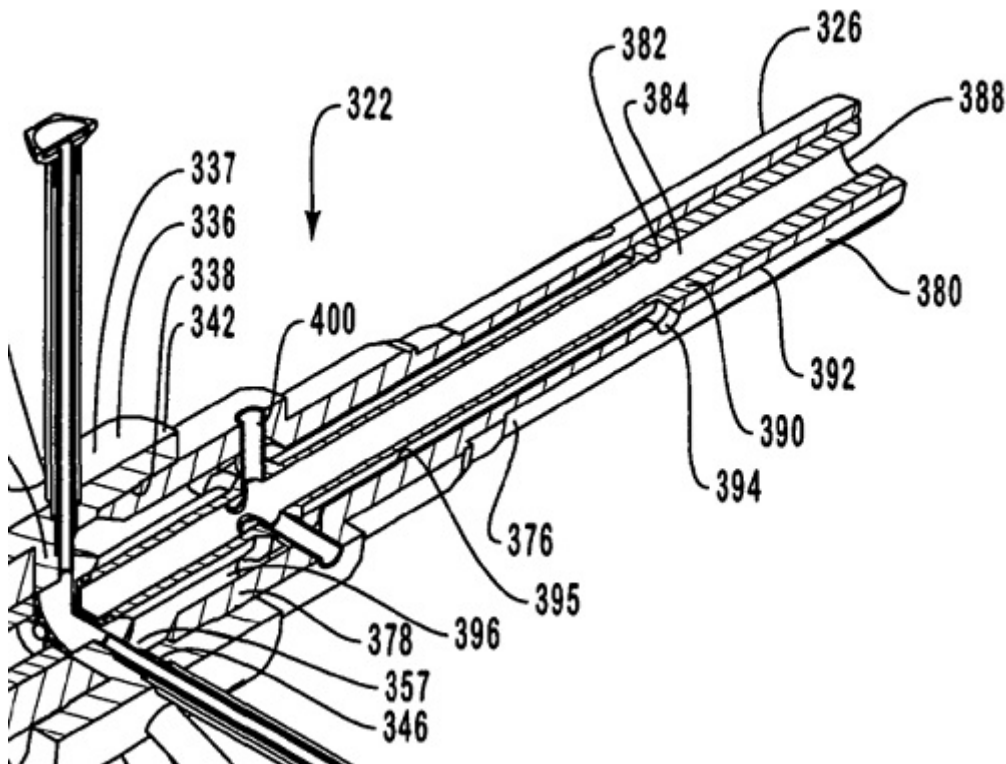
The disputed term “tube” appears in claim 27 of the ’681 Patent, claim 22 of ’069 Patent, and claim 1 of the ’017 Patent. EcoNova’s proposed construction is “a conduit for conveying liquids, gases, or solids.” (Pl.’s Mem. at 14.) The Defendants’ proposed construction is “a hollow elongated usually cylindrical structure.” (Defs.’ Mem. at 16.)

EcoNova argues that “tube” not only includes hollow elongated cylindrical structures, but also includes tunnel-like openings or channels in a larger structure. EcoNova cites to a set of “transfer tubes” shown in the specification as support. (See ’017 Patent fig.20 & col.32 ll.18–21 (allegedly showing that “transfer tubes 400” are tunnel-like openings in the shaft assembly).) The Defendants agree that “tube” could mean hollow elongated cylindrical structures, but disagree with any further construction that embraces tunnels, openings, outlets, or orifices. Defendants point to the prosecution history, arguing that “tube” cannot mean “outlet” because the patent examiner allowed claim 27 of the ’681 Patent over prior art in part because the claim indicates using an extraction “tube” rather than using “outlets” positioned in the peripheral wall. (See Office Action Summary, Initial Common Exhibits Ex. 8, at 67, Nov. 6, 2012, ECF No. 65-8.)

The court concludes that Defendants’ proposed construction is correct. The intrinsic evidence in the specification of the ’017 Patent indicates that “tube” should not cover orifices, ports, outlets, or tunnels. There are many instances where the specification describes “orifices,” “ports,” or “outlets”—but these indicate structures that are merely voids, holes, or openings in a larger structure. For example, a “gas escape orifice” is a small hole in a plug (’017 Patent fig.5 & col.7 ll.62–64), a “central orifice” is a hole in a flat disc (*id.* fig.5 & col.8 ll.22–27), “inlet ports”

are holes in a shaft (id. fig.20 col.22 ll.42–44), and “outlet end” is used to indicate the mouth of a hollow shaft, as well as the opening of a hollow cylindrical manifold (id. fig.20 & col.23 ll.12–14).

In contrast, when the specification uses “tube,” it indicates an independent structure that is hollow, elongated, and usually cylindrical. (See, e.g., ’069 Patent fig.5 & col.9 ll.45–60 (showing and describing exit tube 128 and extraction tubes 160 that are hollow elongated cylindrical structures); ’681 Patent fig.5 & col.7 ll.14–31 (same), ’017 Patent fig.5 & col.7 ll.7–23 (same).) Even the “transfer tubes” cited to by EcoNova indicate a structure that is more than merely a void, hole, or opening in a larger structure. As shown below in a detail of Figure 20 of the ’017 Patent, the specification calls for a shaft assembly 322 made up of many independent structures, two of which are an outer shaft 392 enclosing an inner shaft 390. (See id. fig.20 & col.23 ll.9–44.)



The outer shaft and inner shaft are partially separated by a void called the “removal channel 396.” (See id.) The transfer tubes 400 are a hollow cylinder inserted in between the outer shaft and the inner shaft, allowing liquid to move from outside the outer shaft to inside the inner shaft but never be in fluid contact with the removal channel. (See id.) So, the “transfer tubes” are an independent, hollow, cylindrical structure in between the outer shaft and the inner shaft; they are not just a tunnel carved out of a larger structure, as argued by EcoNova. The transfer tubes cannot be confused with the orifices, ports, or outlets as described in other parts of the specification.

Moreover, as indicated by Defendants, there is evidence in the prosecution history of the ’681 Patent that supports drawing a distinction between an extraction “tube” and an “outlet” located on the peripheral wall. As stated by the patent examiner, one of the reasons why claim 27 of the ’681 Patent was allowed was that prior art only disclosed methods that removed “the settled out particulate matter through peripheral outlets on the peripheral wall,” but did not disclose “removing the [sic] at least a portion of the fluid having the resuspended particulate matter from the vessel through an extraction tube.” (See Office Action Summary, Initial Common Exhibits Ex. 8, at 67, Nov. 6, 2012, ECF No. 65-8 (emphasis added).) As a result, “tube” as used in the disputed language of the claims cannot embrace structures that are merely voids or openings in a larger structure, such as orifices, tunnels, outlets, or mouths.

Finally, both parties offer dictionary definitions that partially overlap. The Defendants’ definition includes “a hollow elongated usually cylindrical structure.” (Defs’ Mem. at 15.) EcoNova’s definition includes “any of various usually cylindrical structures” and “a hollow elongated cylinder.” (Pl.’s Mem. at 21.) This extrinsic evidence corresponds with the intrinsic

evidence analyzed above.

Accordingly, the court’s construction of “tube” is “a hollow elongated usually cylindrical structure, but does not include structures that are merely voids or openings in a larger structure, such as tunnels, orifices, outlets, ports, or mouths.”

5. “Extending From Toward”

The disputed term “extending from toward the rotational axis to toward the peripheral wall” appears in claim 1 of the ’017 Patent. EcoNova’s proposed construction is “the item so described has an extent along the direction from the rotational axis to the peripheral wall.” (Pl.’s Mem. at 22.) The Defendants’ proposed construction is “extending from near the rotational axis to near the peripheral wall.” (See Defs.’ Mem. at 22.)

EcoNova argues that the disputed phrase merely indicates a direction, and cites to the specification and prosecution history for support. Defendants contend that the disputed phrase establishes both orientation and direction, arguing that “toward” in this context means “near.” The court disagrees with Defendants because their proposed construction is too far from the ordinary meaning of the word “toward,” is at odds with the intrinsic evidence, and appears to import limitations from the various embodiments in the specification. Instead, the court agrees with EcoNova that the phrase merely indicates a direction.

The word “toward” is a commonly understood term that indicates a direction, and the specification of the ’017 Patent supports this conclusion. The specification uses “toward” or “towards” thirty-nine times, many of which are unambiguously used to indicate a direction. (See, e.g., ’017 Patent col.15 ll.40–41 (“As a result of the applied centrifugal force, heavy component **241** flows toward wall **92** at equator 97.”); id. col.26 ll.39–41 (“As feed stream **506** travels within

flow channels **502** toward transfer tubes **400**, the stream is subjected to tremendous centrifugal forces”).)

Moreover, the prosecution history of the '017 Patent supports the conclusion that the disputed phrase merely indicates a direction. In the first iteration of the '017 Patent, claim 1 had a dependent claim 5 that read “A separator as recited in claim 1, wherein the first tube is aligned with or offset from the rotational axis.” (See U.S. Patent Application, Initial Common Exhibits Ex. 9, at 175, Nov. 6, 2012, ECF No. 65-9.) The patent examiner rejected claim 5 for indefiniteness because it was unclear how the first tube could extend “from the rotational axis to the peripheral wall” (as required in independent claim 1), but also be aligned with the rotational axis (as required in dependent claim 5). (See Office Action Summary, Initial Common Exhibits Ex. 9, at 55, Nov. 6, 2012, ECF No. 65-9.) In other words, the patent examiner treated the phrase “extending from toward the rotational axis to toward the peripheral wall” as a direction, noting that it could not be “aligned” with the rotational axis.

For the above reasons, the court’s construction of “extending from toward the rotational axis to toward the peripheral wall” is “the item so described has an extent along the direction from the rotational axis to the peripheral wall.”

6. “A Second Tube Extending From Toward”

The disputed term “a second tube extending from toward the rotational axis to toward the rotational axis” appears in claim 1 of the '017 Patent. Both EcoNova and the Defendants agree that the proper construction of this phrase simply combines the construction of the two previous disputed phrases: “tube” and “extending from toward the rotational axis to toward the peripheral wall.” (See J. Claim Construction and Pre-Hr’g Statement Br. 2, 14, Nov. 7, 2012, ECF No. 66

(J. Pre-Hr’g Statement).) EcoNova’s proposed construction is “a conduit for conveying liquids, gases, or solids that has an extent along the direction from the rotational axis to the peripheral wall.” (See Pl.’s Mem. at 21–22.) The Defendants’ proposed construction is “a hollow elongated usually cylindrical structure extending from near the rotational axis to near the peripheral wall.” (Defs.’ Mem. at 21–22.)

The court agrees with the parties that the meaning of this disputed term should be a combination of the constructions of “tube” and “extending from toward the rotational axis to toward the peripheral wall.” By combining the court’s construction of those two terms, the construction of “a second tube extending from toward the rotational axis to toward the rotational axis” is “a second hollow elongated usually cylindrical structure that has an extent along the direction from the rotational axis to the peripheral wall, but does not include structures that are merely voids or openings in a larger structure, such as tunnels, orifices, outlets, ports, or mouths.”

7. “Extraction Tube”

The disputed term “extraction tube” appears in claim 27 of the ’681 Patent and claim 22 of ’069 Patent. EcoNova’s proposed construction is “a tube (as defined above) for extracting liquids, gases, or solids from the chamber.” (See Pl.’s Mem. at 24.) The Defendants’ proposed construction is “a hollow elongated usually cylindrical structure for removing separated material from the separator.” (Defs.’ Mem. at 22.)

In its memo, EcoNova argued that “extraction tube” should build upon the meaning of “tube” by merely adding a definition of what is being extracted through the tube. (See Pl.’s Mem. at 24–25.) But at the Markman hearing, EcoNova’s position was that “extraction tube

should be defined as a tube for extracting materials,” and cautioned the court that further construction risks importing limitations from the preferred embodiments. (Hr’g Tr. 125, 130–31, Dec. 4, 2012, ECF No. 100.) Defendants contend that “extraction tube” should build upon the meaning of tube by adding a definition of what is being extracted, namely the “separated material.”

Both parties agree that the construction should be based upon the construction of “tube.” The primary issue is whether the court should construe “extraction,” and if so, what is the proper construction. The court agrees with the argument in EcoNova’s memo and with Defendants’ argument that “extraction” should be construed, but neither of the parties’ proposed constructions accurately reflects the essence of the claims. Defendants attempt to limit the extracted material only to “separated material,” which appears to import the limitation that only the particulate matter is extracted, and not any liquid. But EcoNova attempts to add “gases” to the material that can be extracted through the “extraction tubes,” which the court does not believe is anticipated in the patents. Instead, the court instead provides a claim construction that is guided by the intrinsic evidence.

As noted above, during claim construction the court may not import limitations from the specification into the claim. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1323–24 (Fed. Cir. 2005) (en banc). There is, though, a “distinction between using the specification to interpret the meaning of a claim and importing limitations from the specification into the claim.” *Id.* at 1323. “[T]he line between construing terms and importing limitations can be discerned with reasonable certainty” if the court focuses “on understanding how a person of ordinary skill in the art would understand the claim terms.” *Id.* In other words, the court asks “whether a person of skill in the

art would understand the embodiments to define the outer limits of the claim term or merely be exemplary in nature.” Id.

The court is persuaded that a person of ordinary skill in the art would understand from the specification that “extract” in “extraction tube” means the removal of liquids and solids from the chamber, but not gases. The ’069 Patent’s summary says that as the centrifugal separator spins, the heavier components within the chamber, such as particulate matter and heavy liquids, move away from the axis of rotation, whereas the lighter components, including gases, move toward the axis of rotation. (’069 Patent col.3 ll.24–27, col.4 ll.29–30.) The summary also states that “[e]ach extraction tube has . . . an opposing second end disposed a short distance from the wall of the vessel.” (Id. col.3 ll.5–7.) And according to the summary, the extraction tubes are positioned within the chamber so that their open end is near where the particulate matter collects (in the form of a fluid slurry), and “the particulate matter is sucked into the extraction tubes and then exits the vessel through the exit tube.” (Id. col.3 ll.33–42.) From the above, it is clear that the extraction tubes may collect both solids and liquids.

But the ’069 Patent does not suggest that the open end of the extraction tubes are positioned in a spot where gases collect. Instead, the summary indicates that gas is removed through a small gas orifice on the exit tube (id. col.3 ll.45–47), which is disposed along the axis of rotation (id. col.3 ll.1–2). Moreover, a number of the preferred embodiments in the ’681 Patent’s specification demonstrate that extraction tubes extend outward to collect liquid and particulate matter, while gases collect near the central axis of rotation and are removed through an orifice. (See ’681 Patent col.7 ll.45–49 (“Each extraction tube **160** has an opening **166** at its second end **163** for receiving separated particulate matter and fluid.”); col.7 ll.1–6 (describing a

gas escape orifice positioned in a plug that is near the central axis of rotation).) And just as in the '069 Patent, nowhere does the '681 Patent suggest that the open end of the extraction tube is positioned in a spot where gases collect. A person of skill in the art of centrifugal separators would understand from these two patents that fluids and particulate matter are removed through “extraction tubes,” while gases are removed using other structures near the axis of rotation.

As a result, the court’s construction of “extraction tube” builds upon the construction of “tube” as construed above, and adds language defining “extraction,” such that “extraction tube” means “a hollow elongated usually cylindrical structure for removing liquids and solids from the chamber.”

8. “An Exit Tube”

The disputed term “an exit tube disposed along at least a portion of the rotation axis of the vessel” appears in claim 22 of the '069 Patent. EcoNova’s proposed construction is “a tube (as defined above) with a first end situated within the chamber and a second end in fluid communication with an exterior of the vessel through which contents of the chamber can pass out. At least a portion of the tube extends along the axis about which the vessel rotates.” (See Pl.’s Mem. at 27.) The Defendants’ proposed construction is “a hollow elongated usually cylindrical structure located along the rotational axis through which separated material exits the separator.” (Defs.’ Mem. at 23–24.)

Both parties agree that the construction should build upon the construction of “tube.” Moreover, the parties do not dispute the construction of “disposed along at least a portion of the rotation axis of the vessel.” Instead, the primary issue is how “exit” should be construed. EcoNova contends that the construction should note that the exit tube has one open end within

the chamber and the other open end outside of the chamber, allowing the contents of the chamber to exit. EcoNova also contends that there is no limit on the type of material that can pass through the exit tube, be it solid, liquid, or gas. The Defendants disagree, arguing that EcoNova's proposed construction attempts to import limitations appearing in claim 22 of the '069 Patent, and that only "separated material" is transported out using the exit tube.

The court disagrees with Defendants' argument that EcoNova is attempting to improperly import limitations by looking to language contained within the same claim as the disputed phrase. As noted above in footnote 4, the court may look to the context of the surrounding words of the claim to help determine the ordinary and customary meaning of a disputed term. This is not the same as importing a limitation from a preferred embodiment described in the specification. See Phillips, 415 F.3d at 1314, 1323–24; ACTV, Inc. v. Walt Disney Co., 346 F.3d 1082, 1088 (Fed. Cir. 2003). However, even though the court is allowed to look to the context of the disputed phrase, the court is not persuaded by EcoNova that it is necessary in this instance. Claim 22 of '069 Patent already states that the exit tube "ha[s] a first end disposed within the chamber and an opposing second end in fluid communication with the exterior of vessel," and that part of the claim is not in dispute. ('069 Patent col.23 ll.29–31.) Accordingly, EcoNova's proposed construction does not shed any light on the disputed elements of the phrase.

That said, the court agrees with the parties' contentions that the construction should clarify what is removed through the exit tube. The Defendants' proposed construction impermissibly attempts to import the limitation that only "separated material" is removed through the exit tube. But EcoNova's proposed construction does not add any language about what is being removed through the exit tube. Rather, the court provides a claim construction that

is guided by the intrinsic evidence.

As noted above, there is a distinction between importing limitations and using the specification to construe claims, and the court may look to the specification to determine what a person with ordinary skill in the art would understand to be the outer limits of the claimed invention. See *Phillips*, 415 F.3d at 1323. The summary section of the '069 Patent describes the “exit tube” as being “disposed along the longitudinal axis of the vessel,” and as being connected to the extraction tubes. ('069 Patent col.3 ll.1–7.) It also states that the “fluid slurry” that is first removed through the extraction tubes “then exits the vessel through the exit tube.” (*Id.* col.3 ll.41–42.) Finally, the summary states that there is a “gas orifice on the exit tube” through which gas is allowed to exit the chamber by passing through the exit tube, along with the particulate matter extracted from the extraction tubes. (See *id.* col.3 ll.51–56.) Accordingly, the patent summary teaches a person of ordinary skill in the art that the exit tube can be used to transport solids, liquids, and gases.

Based on the foregoing, the court’s construction of “exit tube” builds upon the construction of “tube” as construed above, and adds language defining “exit,” such that “exit tube” means “a hollow elongated usually cylindrical structure for removing solids, liquids, and gases from the chamber.”

9. “At or Adjacent”

The disputed term “at or adjacent to the peripheral wall” appears in claim 1 of the '017 Patent and claim 27 of the '681 Patent. EcoNova’s proposed construction is two-part: “‘adjacent the peripheral wall’ means near the peripheral wall. ‘At the peripheral wall’ means in the peripheral wall. When referring to a specific object (such as a tube), this phrase is satisfied if the

object is either (1) near the peripheral wall, or (2) in the peripheral wall.” (See J. Pre-Hr’g Statement 3, 21; cf. Pl.’s Mem. at 25.) The Defendants’ proposed construction is “on or near the peripheral wall.” (Defs.’ Mem. at 27.)

All parties agree that “adjacent” means “near.” The primary dispute is what “at” means. EcoNova argues that “at” means “in,” whereas the Defendants contend that “at” means “on.” The court disagrees with both parties, and instead gives a construction in which “at” and “adjacent” are synonyms.

The court does not believe that “on” is an appropriate construction because it would render the device inoperable. “[A] construction that renders the claimed invention inoperable should be viewed with extreme skepticism.” *AIA Eng’g Ltd. v. Magotteaux Int’l S/A*, 657 F.3d 1264, 1278 (Fed. Cir. 2011). Claim 27 of the ’681 states that the “extraction tube ha[s] an opening to receive the fluid at or adjacent to the peripheral wall.” (’681 Patent col.32 ll.40–42.) If the court were to adopt the Defendants’ proposed construction of “on,” the opening of the extraction tube would be up against the wall, leaving no passage through which solids or liquids could be extracted, and the centrifugal separator could not operate as claimed.

Nor does the court believe that “in” is appropriate, because such a construction would read far more into the scope of the patent than what is there. The court must construe the claims based on the patentee’s version of the claim as drafted, and may not interpret the claims in a way that stretches beyond what one of skill in the art would understand that claim to be. *Allen Eng’g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1349 (Fed. Cir. 2002). The phrase “at or adjacent” is used in the claims to state where to dispense a stream of liquid, or where the opening of the extraction tube is located. But nowhere do the specifications hint at using tubes, tunnels, or

outlets “in” the peripheral wall. There is no basis upon which a person of ordinary skill in the art would understand that the extraction tubes would have an opening “in” the wall, or that a stream of liquid would be delivered “in” the peripheral wall. Furthermore, if “at” meant “in,” the opening of the “extraction tube” would be “in” the peripheral wall, resulting in a tunnel-like opening going through the peripheral wall. But because “tube” is construed by the court to mean an independent structure, and not merely a tunnel in a larger structure, construing “at” to mean “in” would put the two constructions in conflict. EcoNova’s proposed construction simply “stretches the law too far.” See Allen Eng’g, 299 F.3d at 1349.

Because both “on” and “in” are incorrect constructions of “at,” the court supplies its own construction, and concludes that “at” is synonymous with “adjacent” and means “near.” The court must interpret claims in a manner giving effect to all terms in the claim. Becton, Dickinson & Co. v. Tyco Healthcare Grp., LP, 616 F.3d 1249, 1257 (Fed. Cir. 2010). And when different words appear in the same claim, there is a presumption that each word means something different. Bancorp Servs., L.L.C. v. Hartford Life Ins. Co., 359 F.3d 1367, 1373 (Fed. Cir. 2004). However, these rules are not inflexible; “it is not unknown for different words to be used to express similar concepts, even though it may be poor drafting practice.” Id. If there is sufficient evidence, a court may give different words used in the same claim the same meaning. See, e.g., Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc., 381 F.3d 1111, 1119–20 (Fed. Cir. 2004) (giving “connected” and “associated” the same meaning even though they both appeared in the same claim because of the context and intrinsic evidence).

Based upon its reading of the specification and the impossibility of alternative constructions, the court “must conclude that this is simply a case where [EcoNova] used different

words to express similar concepts.” See *id.* Accordingly, the court concludes the construction of “at or adjacent to the peripheral wall” to be “near to the peripheral wall.”

10. “The First Pressure and the Second Pressure”

The disputed phrase “the first pressure and the second pressure being set such that a boundary line between the heavy component and the light component is produced within the chamber at a radial distance from the rotational axis wherein, the first pressure being different than the second pressure” appears in claim 13 of the ’473 Patent. EcoNova’s proposed construction is “producing a first pressure and a second pressure (by, for example, adjusting a flow rate of the light component and/or the heavy component) with a pressure differential between them such that the pressure differential situates and maintains a boundary line near a particular radial distance from the rotational axis.” (Pl.’s Mem. at 28.) The Defendants’ proposed construction is “the first and second pressures being selected and then established.” (Defs.’ Mem. at 25.)

The primary dispute centers on how “set” is construed. Defendants argue that “set” means to select and hold the pressures constant. EcoNova disagrees, arguing that the pressures are allowed to vary while the centrifuge is in use to deal with changes of the material entering the chamber. EcoNova further argues that pressure is necessarily linked to flow rate by Bernoulli’s principle of fluid dynamics.⁵ The court does not believe that either definition adequately reflects the scope of the claim. Defendants’ proposed construction is incomplete, while EcoNova’s proposed construction overcomplicates the meaning by adding examples and using terms that are

⁵ In its most simple form (and assuming a non-viscous and non-compressible fluid), Bernoulli’s principle states that as the speed or flow of the fluid increases, the pressure of the fluid exerted on the walls of its container decreases, and vice versa.

less clear than the language of the claim itself. Instead, the court provides a claim construction that is guided by the patent's intrinsic evidence.

First, the disputed phrase “the first pressure and the second pressure” by itself is unclear. The court clarifies by adding language that states where the first pressure and second pressure are located. Based on the context of the claim, the “first pressure” refers to the pressure at the “light component outlet channel,” and the “second pressure” refers to the pressure at the “heavy component outlet channel.” (’473 Patent col.32 ll.1–4.)

Second, the court agrees with EcoNova that the outlet pressure is invariably linked with flow rate by Bernoulli’s principle, such that, in this context, changes in flow rate necessarily result in a change in pressure, and vice versa. The court also agrees with EcoNova that “set” does not require the pressure to never change. As noted in the specification, it is anticipated that the flow rates—and hence the pressures—at each outlet “will be adjusted to maintain boundary line **245** at a preferred distance range away from rotational axis **90**” while the device is in operation. (’473 Patent col.18 ll.51–65 (emphasis added).) The word “set” cannot mean the flow rates/pressures must always remain the same. Instead, the specification emphasizes that:

“One of the unique benefits of the inventive system is its ability to compensate for changes in the ratio of the two immiscible liquids in supply stream **30**. For example, assuming an oil/water supply stream **30** feeds liquid-liquid separator **244** at a 50/50 mixture. At a given time, the 50/50 mixture suddenly experiences a load change to 10% oil and 90% water. Where the rotational velocity of liquid-liquid separator **244** remains substantially constant, an increased amount of water (heavy component **241**) will tend to cause the boundary line **245** to move toward the rotational axis **90**. Accordingly the pressure sensed at first valve **248** will decrease while the pressure sensed at second valve **256** will increase. As a result, second valve **256** will automatically close slightly and first valve **248** will automatically open slightly. As a result, the operating pressures for valves **248** and **256** and the pressure differential between the valves **248** and **256** are continually held relatively constant even though the ratio of liquids in supply

stream **30** may continually change. As such, the position of boundary line **245** is held relatively constant within vessel **60**.”

(’473 Patent col.17 ll.42–61.) In other words, although the invention allows the flow rates/pressures at the two outlets to vary, the difference between them (the pressure differential) will be kept relatively constant. To “set” the pressures then is inextricably linked to the maintenance of a pressure differential by varying the flow rates/pressures. Based on this intrinsic evidence, the court believes that “set” should be defined in relation to what it is setting, namely a pressure differential that maintains a boundary line at a preferred position within the chamber.

Accordingly, the court’s construction of the disputed phrase is as follows: “the first pressure at the light component outlet channel and the second pressure at the heavy component outlet channel are set to create a pressure differential that maintains a boundary line between the heavy component and the light component within the chamber at a radial distance from the rotational axis.”

III. CONCLUSION

For the above reasons, the disputed claim terms are given the definitions set forth in this opinion.

SO ORDERED this 4th day of January, 2013.

BY THE COURT:

A handwritten signature in black ink that reads "Tena Campbell". The signature is written in a cursive, flowing style.

TENA CAMPBELL
United States District Judge